ADOPTABLE DRAINAGE KEY

FOUL WATER
- Manhole
- Pipe Line & Flow Direction
- Existing Line

SURFACE WATER
- Manhole
- Pipe Line & Flow Direction
- Existing Line

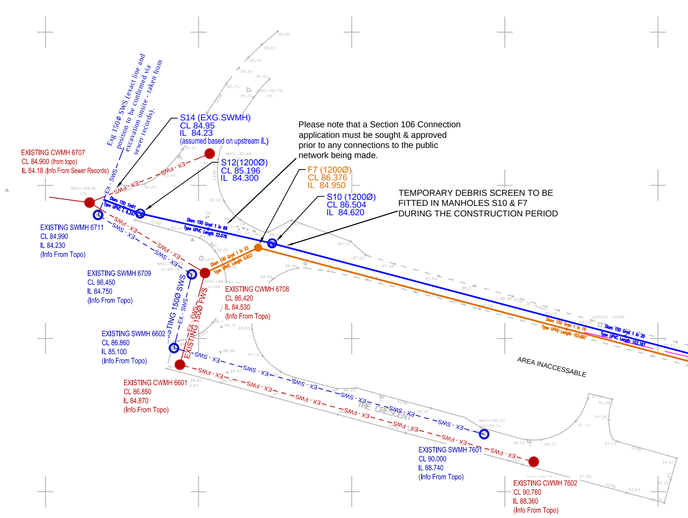
HIGHWAY DRAINAGE
- Gully
- Highway Drain / Gully Connection

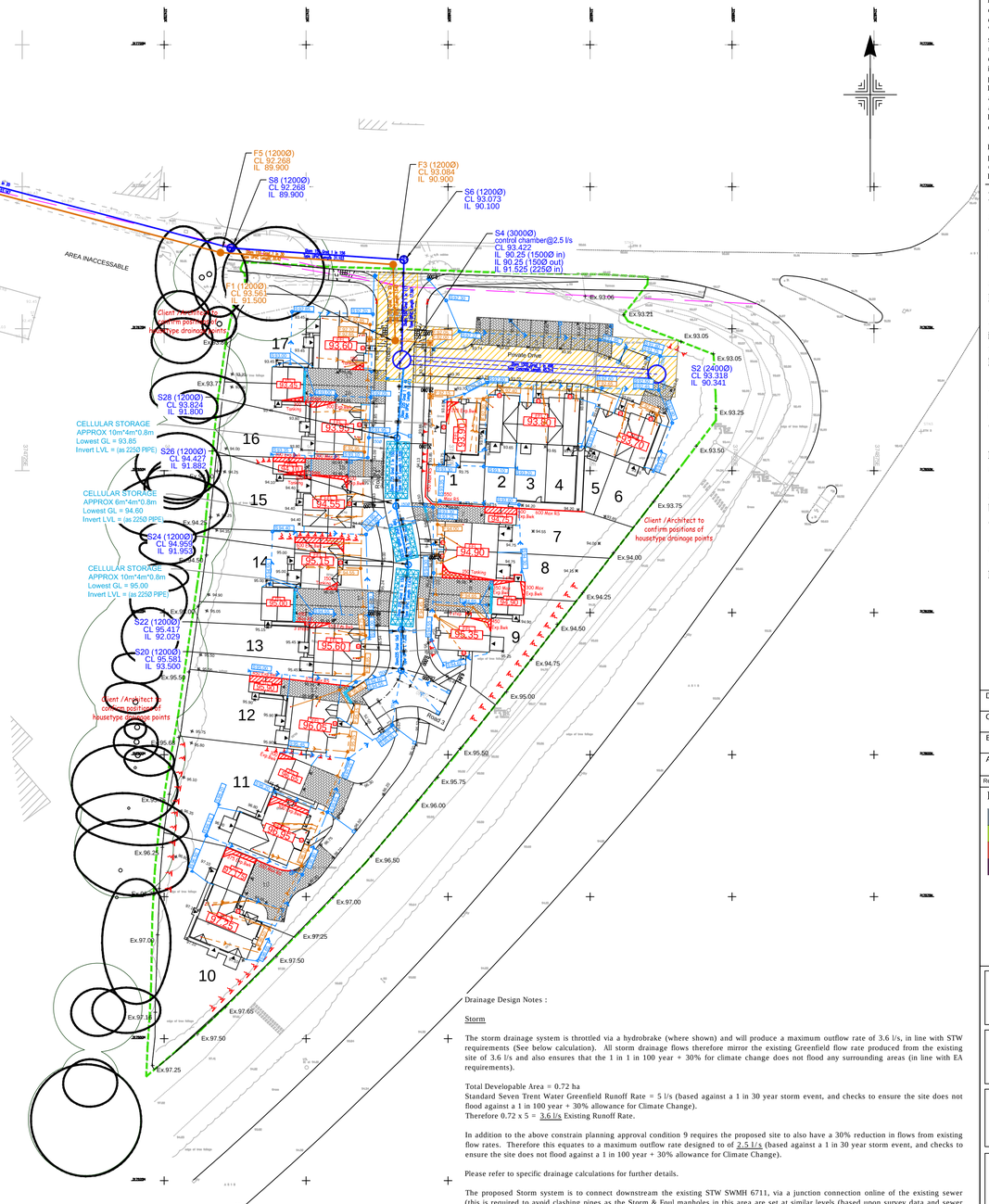
PRELIMINARY
SUBJECT TO SECTION 104 APPROVAL

ALL SEWERS IN ACCORDANCE WITH SEWER FOR ADOPTION 6TH EDITION

ROAD AND LEVELS KEY

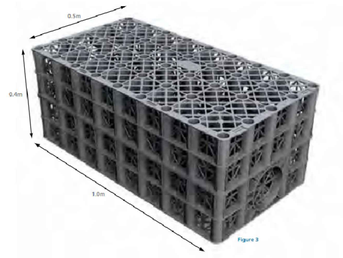
- Road Centre Line
- Carriageway High Point (HP)
- Carriageway Low Point (LP)
- Existing Ground Level (EX.77.89)
- Finished Floor Level (77.450)
- Street Name Plate
- Part M Access
- Pedestrian Crossing





Aquacell Unit as Specified by Cameron Homes.

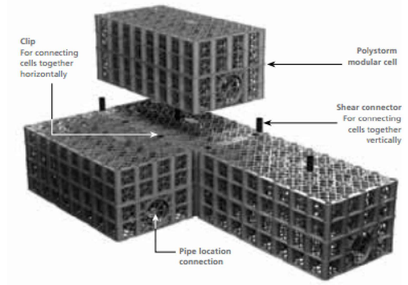
2.3 Polystorm



Designed for use in trafficked and loaded applications with a load bearing capacity of:
40 tonnes

Technical specification overview	
Unit type	Polystorm
Product code	PSM1**
Dimensions	1m x 0.5m x 0.4m high
Total volume	0.2m per cube
Unit weight	9kgs**
Cube storage volume	0.19m³ (190 litres)
Surface area	48% perforated
Compressive strength	Maximum 40 tonnes per sq metre
Maximum burial depth	3.7 metres***

Polystorm Construction Details



It is the contractors & Developers responsibility to check and confirm the outfall invert levels are correct prior to undertaking construction works onsite.

Should any invert levels be higher than specified, then this is to be reported back to the engineer immediately prior to continuing works for further advice.

General Construction Notes -

- Any tactile paving crossing points are to be agreed onsite with Engineer
- All private drainage plot connection points to be checked against current house type plans when onsite. Should any differences occur further advice from the engineer is to be requested prior to construction.
- All existing Drainage invert levels & positions to be confirmed by contractor prior to any works being undertaken onsite. Any discrepancy in to be reported back the the engineer immediately and further advice sort, prior to construction of the proposed drainage scheme.
- All Levels, Highways & Drainage Details subject to change until receipt of technical approval Via relevant approving authorities.
- Building Drainage shall comply with latest NHBC / LA requirements.
- All building drainage shall be 100mm Diameter unless specified otherwise.
- Concrete protection shall be provided to all uPVC pipes with less than 600mm cover & to clay pipes with less than 300mm cover.
- Where a pipe passes through a wall an opening is to be formed through the wall to give at least 50mm clearance around the pipe. Brickwork over shall be supported by a lintel. A rocker pipe of maximum 600mm length shall be used to continue the pipework.
- Where a pipe trench is within 1m of a building it is to be filled with concrete up to a level below the building equal to the distance from the building less 150mm.
- Where the formation of a pipe trench is above original ground level, levels are to be made up with well compacted DTp Type 2 material or better.
- Where a driveway falls towards a dwelling it shall be provide with a suitable gully or drainage channel to prevent water damaging the building.
- All retaining walls above 600mm to have suitable fall protection measures at the higher level.
- All adoptable pipework for highway drains to be minimum Class M to BS5911 or Class 120 Clay or 28 kN/m crushing strength if 150mm diameter to BS EN 295-1 and laid on Class S Granular bed unless shown otherwise.
- Manholes covers and gulley grates to be adopted shall be kite marked and to BS EN124, Class D400.
- All connections to sewerage underneath highways must be made via factory made junctions.
- All drainage under proposed adoptable roads must be backfilled with an approved graded granular material.
- All Drainage materials marked with (*) to be agreed with the STW Clerk of Works prior to any changes to the material palette specified. Pipe deformation calculations for all adoptable drainage pipes to be supplied by selected contractor and supplied to engineer and STW accordingly.
- All house drainage points to be checked onsite against the house type floor plans, to confirm all foul drainage points are accurately positioned. This drawing is based upon the layout provided.

Drainage Design Notes :

Storm

The storm drainage system is throttled via a hydrobrake (where shown) and will produce a maximum outflow rate of 3.6 l/s, in line with STW requirements (See below calculation). All storm drainage flows therefore mirror the existing Greenfield flow rate produced from the existing site of 3.6 l/s and also ensures that the 1 in 1 in 100 year + 30% for climate change does not flood any surrounding areas (in line with EA requirements).

Total Developable Area = 0.72 ha
Standard Seven Trent Water Greenfield Runoff Rate = 5 l/s (based against a 1 in 30 year storm event, and checks to ensure the site does not flood against a 1 in 100 year + 30% allowance for Climate Change).
Therefore 0.72 x 5 = 3.6 l/s Existing Runoff Rate.

In addition to the above constrain planning approval condition 9 requires the proposed site to also have a 30% reduction in flows from existing flow rates. Therefore this equates to a maximum outflow rate designed to of 2.5 l/s (based against a 1 in 30 year storm event, and checks to ensure the site does not flood against a 1 in 100 year + 30% allowance for Climate Change).

Please refer to specific drainage calculations for further details.

The proposed Storm system is to connect downstream the existing STW SWMH 6711, via a junction connection online of the existing sewer (this is required to avoid clashing pipes as the Storm & Foul manholes in this area are set at similar levels (based upon survey data and sewer record data available)).

This is approximately 2 metres downstream of the original STW developer enquiry dated 9th April 2014 (Ref:WT35764/SAP8139898), in order to avoid the pipe clashing issues to achieve the original advise to connect into STW SWMH 6711.

It is noted from the GEORISK intrusive ground investigation report (reference 15193-1 November 2015) provided by the client that ground porosity testing concluded that alternative method of drainage other than infiltration should be considered. It is also noted that there are no available watercourses to connect into, therefore the positive, controlled drainage solution has been followed in line with STW requirements.

Urban Creep requirement of 10% has been allowed within the drainage calculations in accordance with SCC drainage requirement (areas increased within microdrainage calculations compared to those indicated on the supporting Impermeable Drainage Area Plan.

Foul

The proposed Foul system is to connect into the existing STW CWMH 6601, via the existing manhole online of the existing sewer.

This is downstream of the original STW developer enquiry dated 9th April 2014 (Ref:WT35764/SAP8139898) which recommended to connect to STW CWMH 7602, in order to avoid the existing trees and level issues to achieve the original advise to connect into STW CWMH 7602.

The Contractor is to check and verify all building and site dimensions, levels and sewer invert levels at connection points before work starts. The Contractor is to comply in all respects with current Building Legislation, British Standard Specifications , Building Regulations, Construction (Design & Management) Regulations, Party Wall Act, etc. whether or not specifically stated on this drawing. This drawing must be read with and checked against any structural, geotechnical or other specialist documentation provided. This drawing is not intended to show details of foundations, ground conditions or ground contaminants. Each area of ground relied upon to support any structure depicted (including drainage) must be investigated by the Contractor. A suitable method of foundation should be provided allowing for existing ground conditions. Any suspect or fluid ground, contaminates on or within the ground, should be further investigated by a suitable expert. Any earthwork constructions shown indicate typical slopes for guidance only & should be further investigated by a suitable expert.
Where existing trees / structures are to be retained they should be subject to a full specialist inspection for safety. All trees are to be planted so as to ensure they are a minimum of 5 metres from buildings. A suitable method of foundation is to be provided to accommodate the proposed tree planting.
Residential & Commercial Engineering Limited do not accept any responsibility for any losses (financial or otherwise) to any Client or third party arising out of the Clients (be it Developer or Contractor but not limited thereto) non-compliance with afore mentioned provisos.

Notes:

All Drainage Shown is Subject to confirmation of the existing invert levels and cover levels at the point of connection to the existing public sewerage system.

All private manholes can be replaced preformed plastic if specified by developer.

Should any additional incoming drainage into the proposed site be found during site works this should be reported back to the Engineer immediately for further advice.

Streetlight Design to be allowed for at tender stage. This is awaited at the time this design was produced & issued from Third Parties.

Developer to confirm all street light & service details & diversion requirements.

All S106 Drainage Connection approvals to be sort by contractor prior to commencement of works.

All details & design to be constructed in accordance with Sewers for Adoption 6th Edition.

Rev	Description	Date	Drawn	Check
D	Engineering updated to latest planning layout Rev E.	04.10.16	AJM	PT
C	Engineering updated & levels adjusted to Clients comments.	04.08.16	SM	PT
B	Engineering updated to suit revised planning layout.	19.07.16	SM	GR
A	Outflow rate reduced by 30% to comply with Planning Condition 9.	29/02/16	GJ	#

Revisions:

CAMERON

RACE
RESIDENTIAL & COMMERCIAL ENGINEERING

Drawing Status:
Subject to Technical Approvals

Client:
CAMERON HOMES

Project:
CHURCH ASTON, NEWPORT

Title:
ENGINEERING LAYOUT
(1-500 SCALE)

Job Number.
RACE/CH/CAN
Drawing No.
ENG_100
Revision. D

Scale: 1:500 @ A1
Date: JAN ' 16
Drawn by: GJ
Checked by: AJM

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